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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

MONTHLY REPORT OF THE OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

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MONTHLY REPORT
OFFICES OF FOREST EXPERIENCE STATIONS AND DENDROLOGY
October, 1924.

THE SPIRIT OF RESEARCH

In an interesting article on "Research work and its applications" in a recent number of "Nature," the author, Sir William Bragg, sums up the important reasons for research as follows:

"Here are various reasons for the encouragement of research: the benefit of the student, the addition to human knowledge, power and riches, and the needs of defence, military and industrial. But I think we still have failed to include the most important reason of all, the real reason of which the others are only derivatives. It is that the spirit of research is like the movement of running water, and the absence of it like the stagnation of a pool. Scientific research, in its widest sense, implies, of course, far more than exploring the question of physics and chemistry and biology. It is not a religion; but it is the act of one. It is the outcome of a belief that in all things which we try to do we may by careful seeking and by a better understanding do them better; that the world, far beyond what we can see of it on the surface, is full of things which it would be well for us to know. It is our duty and our gain to explore; we have always grown by doing so, and we believe that the health of our souls depends on doing so. Shall we sit still when there are difficult questions to solve; and when the answers may give us new insight and new power? There is a hesitation which would beg us not to push forward lest we come to think less of the world. As against this, research is an act of faith in the immensity of things. There is no end to the search; it is a poor thought that there might be.

"The spirit of research would drive us all to work to the utmost of our power, believing that the more we do and the better we do it, the better for the work and lives of others. It is vigorous, hopeful, trustful and friendly; it adds always new interest and new life.

FOREST EXPERIMENT STATIONS
Washington

During the latter part of October, Mr. Clapp completed his lengthy field trip and returned to Washington, October being spent at the Southern and Appalachian stations. While in the South Mr. Clapp and Forbes visited a number of important centers being considered as possible headquarters,

and interviewed representative men at each place. Mr. Clapp returned to Washington by the way of the Appalachian Station.

On October 27 Mr. Munns attended a meeting of foresters called to consider the possibilities of entering into cooperation with the International Education Board, whereby it would be possible to secure the services of that organization in financing an interchange of foresters between this country and abroad. Steps were also taken to encourage the collection of international forestry statistics in connection with the International Institute of Agriculture at Rome.

In connection with the expansion of our part of "Research in Pictures," there is a great need for pictures which show specifically the entire life history of the tree from the time that the stand is first cut until it is ready for the harvest again. A search of the collection in Washington reveals that there are no photographs of large mills, no photographs of the end of logs showing fire scars, no photographs of anyone using an increment borer, or of much of the work of the forest experiment stations. We are continually handicapped by the demands for pictures of this character for illustrative purposes, not alone for our own publications and publicity, but for the Forest Service generally. One thing which should be borne in mind in taking pictures is that if there is someone in the foreground there is a material increase in the amount of interest that is taken in the picture. The addition of a human figure means all the difference in the world between just a picture and a story.

The machine tabulator was put to work this month on an entirely new line of endeavor, that of working out the correlation coefficients for various factors in a study of the fire hazard. In the past, because of the tremendous amount of work involved in determining multiple correlations, very little mathematical analysis of forestry data was ever attempted. Under the present system it is possible to do this with only a very small amount of hand work, and instead of several months' time devoted to computing, the work can be run off in but a few hours. In this particular study an analysis was made of some of the meteorological data collected at the Priest River station. The study involved temperature, humidity, wind, absolute humidity, and duff moisture.

A correlation study was also made of some of the southern pine growth data. The stumpage price study records were put on cards and it is expected that in a relatively short time the study will be completed. Taking less than a month's time for the work under this new method, this study would have required in the neighborhood of 120 months of one person engaged in just the mere compilation of the figures involved without the analysis.

In the Computing Section the southern pine study took up 56 per cent of the time of the section. The study is now rapidly approaching the stage when it appears that the yield tables will be completed in a relatively short time. Checks and rechecks have been made of all the original data and now nothing remains but only the very best of the field plots chosen by the members of the Southern Experiment Station.

The western yellow pine volume table study required 20 per cent of the time of the section of Forest Measurements during the month, while the study of the southern pine lumber price took an additional 10 per cent.

The work of apportioning funds under the road act to the various counties in accordance with the resources of the county has been begun. This is the last year that it will be necessary to rework these values. As estimated, this will take at least a month's time of one or two people. As increased field knowledge is secured there is a gradual revision of the old data which necessitates reworking the entire valuation by counties and portions of counties for individual forests for all the Districts.

EDITOR'S OFFICE

Mr. J. Clyde Marquis, of the Bureau of Agricultural Economics, is giving a course in Agricultural Writing and Editing that might profitably be attended by research men in every bureau of the Department, since part of the research man's job is to get the results of his studies into acceptable writing. Here follow a few statements of Mr. Marquis that seem particularly helpful.

Before starting to write, organize what you know and determine what you do not know about your subject; build on that.

Get what you have to say on paper by the easiest possible means; get it into shape, edit it, afterwards.

If you cannot grasp your subject as a whole before you start, if you cannot see it in terms of the big points and the subordinate points, if you are not able to give the values of your study in a few bold strokes, there is not much use in trying to write a report on it for it will not be readable.

The tests of good writing, always and invariably, are (1) Clearness; (2) Force; (3) Ease.

Most dull writing lacks in exposition - a clear explanation and analysis of the main and subsidiary points. The purpose of such explanation and analysis is to develop in the reader a line of thought parallel to your own. If you do not take your reader with you, your writing is a literary vacuum.

Remember that until you have gained the reader's sympathetic interest he is always exerting mental energy in opposition to you. No one but your most intimate friends and relatives will read what you write with entire willingness, unless and until you have aroused in him (1) a clear understanding of what you are about, (2) an interest in what you have to say or how you say it, (3) a confidence that what you are saying will proceed from reasonable bases to reasonable conclusions.

You can only get across to the reader what he feels relates itself in some way to his present knowledge or experience. Never snub a reader, if you want any.

Things to watch in your writing are:

Trite phrases
Repetition
Contradictions
Loose statement
Jargon or inaccurate words and phrases
"A" and "the"
Opportunities for the use of original phrases
in place of stereotyped expressions

Apropos of "things to watch" is a recent report of W. N. S., the demon statistician, compiled after a careful perusal of the Office of Forest Experiment Stations monthly reports for August and September. For sheer ruthless brutality, it can hardly be equalled, as all will agree.

Dear Editor:

I see from the mo. repts. of F. E. Stations that we had a lot of Messers at some of them in August:

	Gangs of MESSERS during August	September
Southern	5	1
Priest River	3	1
Pacific	2	0
Fremont	1	0
	11	2

It's a mess ?

NOTE also:

"No rain was received"
"Only 0.11 inch...received
Shouldn't they let it fall?

"Kempff ... absorbed Gisborne's work"
By induction, transfusion, or what?

"Mr. Hadley occupied most of his time"
Wonder if he sat on it?

"It is generally the observation among forest officers"

Is there a longer way to say it?

"Showing the character of the size of jack pine"

Can they?

"Mr. Barrett expressed a feeling that ... a bulletin
... was needed"

Why didn't he mail it, and why isn't it still needed?

I see that there were no initiations during August, but Washington and Northeast each had one in September; also that most of the stations should feel safe, because they secured data 9 times in August and 10 times in September.

DENDROLOGY

Federal Horticultural Board Activities

The Mediterranean fruit fly is now known to infest Almeria grapes, which for years previous to 1923 were extensively imported into the United States from Spain and Portugal. During the winter of 1923-1924 the Federal Horticultural Board, fearing that this fruit fly might with disastrous results be introduced into our citrus belt, restricted the entrance of Almeria grapes to the port of New York, subject to critical inspection before release. The insect was soon found in several shipments of grapes. As importers had previously agreed to accept exclusion of all shipments should infestation be found, further shipments were then stopped. (In previous years the total value of Spanish and Portuguese grapes sold in this country roughly amounted to from $600,000 to $800,000 per year.)

At once this year both importing interests here and the governments of Spain and Portugal instituted a clean-up campaign, hoping thereby to induce the board to permit importations during 1924-1925.

At the beginning of the 1924 shipping season several large American importing organizations informed the board that the grape-growing areas of these countries had been thoroughly cleaned up and that this year's crop was uninfested by the fruit fly. It happened, however, that the board had sent a capable entomologist to Spain and Portugal for the purpose of independently investigating the grape-growing areas there during August and early September. The result was that fruit flies were found infesting near-by figs, plums and other fruits in such numbers as to make it certain that the grapes would be infested, as they had been the previous year, during September before they are harvested for export.

To the request of American importers that they be permitted to bring Almeria grapes to the United States during 1924-1925, the board was obliged to reply negatively. Incidentally, it appeared to us that the assurances given by importers that the grape-growing sections had been thoroughly ridded of fruit fly were utterly unreliable.

The wisdom of excluding Almeria grapes from this country during the present year was recently emphasized by the finding of infestation in several cargoes of these grapes sent to Santo Domingo, illegally by way of New York. As a friendly act the board informed Santo Domingo of the danger she would be exposing her fruit industry to by admitting these grapes. Likewise, several cargoes of Almeria grapes recently sent to Cuba were held there pending examination by her inspectors. Cuban inspectors failed, however, to find fruit fly in these shipments, but a board inspector loaned to the Cuban government found abundant infestation. (The Federal Horticultural Board requires Cuba and Santo Domingo to forbid entrance to their ports of all pest-carrying products, so long as they export horticultural products to the United States.) Accordingly Santo Domingo and Cuba ordered all of these shipments deported.

Reconsideration of the White Pine Blister Rust Quarantine

A conference to consider a possible modification of the White Pine Blister Rust quarantine was held by the Federal Horticultural Board on September 26. Present at this meeting were some 200 or more Federal and State officials, representing control interests, and nurserymen representing trade interests in the eastern United States.

The wisdom of holding the present quarantine line, which divides the country from Texas to Montana into two parts, was thoroughly reviewed, as also was the wisdom of altering quarantine lines in eastern United States now isolating the heavily infested New England States and preventing trade movement of white pine, currants and gooseberries to uninfested territory within the East.

Nursery interests announced that they are now eliminating black currants from their nurseries, this group being the most susceptible to the rust. But they asked that all other uninfested leafless and sprayed forms of currants and gooseberries from the vicinity of infested areas and all 5-leafed pines from uninfested areas, be permitted movement throughout the East. They also asked that the "Hindenburg Rust Line," now dividing the country into two parts, be moved west one tier of States.

To Federal and State control agencies it became evident that nursery trade interests within infested territory were willing to take greater risks than are justified of spreading infestation within the as yet uninfested sections of the East.

The board promised carefully to weigh all of the arguments presented and later to announce its decision. As yet this has not been done, but it is not difficult to predict what the decision is likely to be.

Revised Check List

Final touches are now being given to the long-delayed Check List and the manuscript will be on its way to the printer within a very short time.

Delay in issuing the work has seemed necessary because of the very important matter of accomplishing as wide an agreement as possible on common names through the very exhaustive consideration the Service's Common Names Committee gave to the whole subject. This included an earnest attempt to bring Check List names into agreement with the common names of trees recently published in "Standardized Plant Names" (in the interest of the nursery trade).

"Growing and Planting of Conifers on the Farm" by Mr. C. R. Tillotson is one of the new bulletins soon to be offered for publication by the Forest Service. The policy now adopted of referring all prospective publications for review to members of the Service likely to have helpful suggestions and for approval, gives early opportunity for interested members of the Service to see forthcoming publications in the making. One of the most helpful features of this bulletin is the map dividing the country into regions of similar climate, for each of which are given the names of trees suitable for cultivation on the farm or ranch. Other subjects briefly discussed in the bulletin, such as collecting, storing and planting coniferous seeds and the raising of young trees will be helpful to farmers and ranchmen in stimulating the planting of evergreens for ornament, windbreaks and a home supply of timber.

APPALACHIAN FOREST EXPERIMENT STATION

General

Mr. Clapp spent a week at the station, visiting the proposed experimental area at Bent Creek in the Pisgah National Forest, the nursery experiments in the Champion Fibre Company's nursery at Canton, N.C., and the planting experiments in the Black Mountains. Dr. F. C. Craighead, of the Office of Forest Entomology, accompanied the party on these trips with a view to the continuation of the forest insect work which was begun near Asheville last summer. The Black Mountain plantations were found to be in a thrifty condition, all species showing up very well.

Mr. Clapp discussed with the staff the subject of "working centers" and various matters connected with current and proposed projects.

Parties of delegates to the Appalachian Logging Congress, which met in Asheville October 23-25, were escorted through the Biltmore plantations by various members of the staff. These parties comprised a special committee delegated to report to the Congress and included R. C. Staebner, formerly with the Forest Service, and W. L. Gooch, a forestry graduate now with the Elk River Lumber Company, Swandale, W. Va. It will be of interest to note that Staebner was elected president and Gooch a member of the executive committee of the congress.

Other visitors have been J. E. Myer of the New York State College of Forestry, who is studying the influence of environment on fiber length of forest trees in connection with graduate work for his doctor's thesis, and Ricardo Rodriguez of Mexico, who is finishing extended studies of forestry and logging in the United States.

The progress of the fire damage, southern white cedar, and spruce regeneration projects has been greatly facilitated by the continued assignment of Miss Stabler from Washington, who has finished the initial computations on the first two and is well into the third. Miss Laxton has been helping Haasis with computations for a report on grazing damage (Pa-1) and for the records of the Shenandoah sample plots (Mc-2) established last summer.

Information has been received that Dr. C. A. Schenck is planning to revisit this country in December for a lecture tour.

Vale, chestnut

The fall of Connecticut as the original chestnut State is graphically brought home by a request received from the Connecticut Agricultural Experiment Station for about a peck of chestnuts, this amount not being available in Connecticut. A good chestnut crop near Asheville made it easy to supply this demand, which was for experimental purposes under the direction of Dr. G. P. Clinton. Moral: make your chestnut requisitions early. We do not guarantee the supply.

Methods of Cutting and Natural Reproduction in Upland Hardwoods (Mc-2)

Because of the importance of the oaks in the Southern Appalachian forests, now especially emphasized in the natural replacement of the chestnut, the station is beginning a study of oak seed and seedling characteristics. A plan for this study has been prepared by Korstian. Six oaks - white, chestnut, northern red, black, scarlet, and southern red - are worthy of special study, but practical limitations have confined this season's work to the first four of these. Korstian and Reineke collected several lots of acorns for use in a number of experiments on storage, depth of planting in the nursery, and the natural conditions influencing germination and early survival of these oaks. These experiments are now in progress. The remainder of the fall field work on this study will be completed at Canton and on the Bent Creek experimental area during November.

Forest Fire Weather (Pf-2)

The presence of Mr. Stabler in Asheville during Mr. Clapp's visit was made the occasion for a conference on the use of weather observations in fire protection work. The current weather maps were inspected at the Asheville Station of the Weather Bureau and the details of a plan for cooperation with the Weather Bureau were discussed. This plan was later drawn up by McCarthy and submitted to the Washington office for action. It provides for forecasts of weather three days in advance to serve as a basis for adjustments of the strength of fire fighting forces in the National Forests of this region.

Fire Damage (Pf-4)

McCarthy, accompanying C. I. Peterson, District Fire Warden for the mountain district of North Carolina, attended meetings of the fire wardens of Clay and Cherokee counties. At Mr. Peterson's invitation, McCarthy addressed both meetings on the subject of forest fire danger, in order to give these men information for use in these districts. The wardens, though working for comparatively small pay, were very enthusiastic and anxious to get facts which could be used as an argument against fire in their own communities. The trip served to extend the acquaintance of the station in the southwestern part of North Carolina.

Nursery (Fp-3)

Korstian made the initial formaldehyde treatment in a damping off and weed control experiment which is being conducted at the Canton nursery in cooperation with the Bureau of Plant Industry and the Champion Fibre Company.

FREMONT EXPERIMENT STATION

October Activities

As usual, October has been one of the busiest months of the year, the snappy weather and near approach of winter seeming to stimulate one's desire to do all the things that have been left undone during the summer season.

Alterations to the office building requiring the services of a plasterer, advantage was taken of his presence to also do a long-needed repair job on Roeser's dwelling and to plaster the living room of Bates' dwelling, which at the time of its construction seven years ago was lathed throughout. However, this one dirty experience with plastering in an occupied house has destroyed all desire to have the remainder of the house so finished.

The appearance of the office has been greatly improved, its foundations protected and drainage cared for by the construction of cement sidewalks on two sides of the building. Experience has gradually shown that on such steep ground as the station site only cement walks can be kept in place without very large maintenance costs.

Considerable expense and effort on the part of all members of the staff have been put into preparation for the continuation next year of the transpiration tests on a larger scale than heretofore. Early in the summer 35 ash cans such as were used in Briggs' and Shantz' water-requirements study, were obtained by transfer from the Bureau of Plant Industry, and for the continuation of our study on the same basis as this year it has been necessary to import from near-by regions sufficient soil of three different types to fill a total of 21 of these cans.

The wintering of the small seedlings developed this year in the transpiration tests, so that they can be transplanted next spring into the large cans, has presented quite a problem. It has finally been decided to keep them in the greenhouse where they will be protected from too rapid freezing and thawing, but at the same time keep them cool enough so that they will experience a considerable period of dormancy. Transpiration losses during the winter will be measured at weekly instead of daily intervals.

During the month 19 bushels of fresh yellow pine cones were received from the Harney Forest, a portion being given artificial heat treatments at once, and the remainder placed in the drying shed. Since the destruction by fire last winter of the Harney seed plant, the writer has vociferously argued for drying sheds in place of the unnecessary and dangerous artificial drying plant. This test is a part of the experimentation necessary to convince the skeptics that yellow pine cones can be successfully opened without artificial heat and without the uncertainties of drying in the open (on sheets). The cones placed in storage at Fremont on October 22, wet and moldy at the time, in 10 days' time lost

about 5 pounds of water per bushel, or one-third of the total amount necessary to effect their complete opening. It is true that two days of this period were unusually dry and windy, but is quite apparent also that by the end of 60 days, when the second artificial drying test was to be made, the cones will be so nearly opened that artificial treatment will be merely a waste of time.

A point of the most alluring technical interest has made itself apparent during this handling of the yellow pine cones which, as stated, were shipped in a damp condition and were molding badly when they reached us. This is that artificial treatment of cones at high temperatures tends to destroy spores, and through this cleaning frees the seeds from destructive agencies, which, immediately or years later might reduce their germinative capacities. When sown in sand, seeds do not very often show moldiness, but seeds too near the surface mold very quickly, and there can be little doubt but that any germination test will be somewhat affected by mold injury if the mold spores are present. In an attempt to determine the extent of this danger and a method of combating it, germination tests of seeds treated in various ways will be made in sterilized Petri dishes where the development of mold can be closely watched.

The point to be observed is that artificial heat may have little effect, good or bad, on the seeds themselves, but may be valuable in cleansing them. It is of great interest to determine now, if possible, what influence this factor may have had on the results secured in lodgepole pine seed extractions.

Considerable of Roeser's time during October has been spent on the station management project, mapping cut-over areas and thinning areas of young spruce which occur within the area recently cut.

Some time has been used by Bates in analyzing the soils collected last summer which appear to show the influence of soil permeability and receptiveness on the distribution of yellow pine, but the results of these analyses cannot yet be reported.

November Plans

With the closing up by November 15 of the current test in F-5, effect of soil qualities on growth, field work for the season will be practically completed, and both Roeser and Bates will settle down to a steady grind of office work. The immediate jobs are the revision of the lodgepole seed report by Bates, and tabulation and computation of growth data for a number of the management projects.

Of the three principal projects, the yield study of jack pine and the progress of reforestation study have now reached the report stage, while the fire protection study is still largely in the process of collecting field data. A brief statement concerning the field data secured by Kittredge in his reforestation study was made in the September report.

Mention may be made of the field work just completed by Wackerman on the jack pine study. The field work was begun last fall in the Lower Peninsula of Michigan where 37 well-stocked plots for a yield table were secured. Last spring six weeks were spent on this work in Wisconsin, in cooperation with the State Department of Conservation. Seventy plots were secured in all sections of Wisconsin which support jack pine stands. The work was transferred again to Michigan about July 15 where in cooperation with the Michigan Department of Conservation the study was extended to partially stocked stands and to well stocked stands. Forty-five well-stocked plots were secured in the Upper Peninsula of Michigan, in addition to two and one-half sections of partially stocked stands. The work was completed in Michigan by the end of August. The month of October was spent largely in Minnesota in supplementing some of the earlier work there. In all, there were secured 70 plots of jack pine from Wisconsin, 82 plots from Michigan and 148 plots from Minnesota, a total of 300 plots, which are the basis of the study of the jack pine growth in the Lake States. Besides, there are form measurements of 1150 jack pine trees for the construction of taper, form and volume tables. The computation and office work on this enormous amount of data are now just beginning.

Kittredge and Wackerman are now in the office working up their field data. Mitchell is in Michigan in connection with his fire protection study.

Of the other activities of the station, the following may be of some interest. On October 10 and 11, Zon met with the representatives of Minnesota daily and weekly newspapers at Cloquet, and took part in acquainting the newspaper men with the forest situation in Minnesota. On October 15 and 16 he attended the Tri-State Development Congress at Ashland, Wis., and addressed the congress on the work of the experiment station.

Most of the month of October was spent by Zon in the field, chiefly in Wisconsin and Michigan. In Wisconsin, he examined several forest properties with the view of trying out partial cutting. One tract at Lakewood, Wis., is now being examined by two technical foresters in private practice for the purpose of outlining a method of logging that would maintain a continuous supply of the larger-sized timber. If this plan goes through, this property may become a valuable center for some permanent sample plot work and particularly as a demonstration area for other lumbermen.

The graduate seminar in forestry was started during this month. The subject under consideration this term will be soils in their relation to forest growth and forest distribution in the Lake States.

The Secretary of the Michigan Conservation Commission requested the experiment station to submit a report of the work done in Michigan for publication in the report of the Conservation Commission. This request has been complied with.

The timber sale policy for the State-owned forest lands of Minnesota, as outlined by Zon and turned over to the State Timber Board, was more or less adopted, particularly with regard to the cutting regulations.

At the suggestion emanating from the Experiment Station, Charles Lathrop Pack has endowed a Charles Lathrop Pack Foundation Forestry Prize at the University of Minnesota.

Mitchell attended the meeting of the Ohio Valley Section of the Society of American Foresters at Clifty Falls, Indiana. He will now be able to report on the problems of that region and to acquaint the section with the work of the Experiment Station.

S. S. Burton, in charge of the cooperative demonstration windbreak project, has just returned from a three-month inspection trip of the windbreaks. During the summer he visited a total of 281 plantations, of which 47 were new cooperators. These cooperators are scattered over 54 counties of the State, chiefly in the western or prairie section and ranging from the Iowa line to the Canadian border. During the spring of 1924, 88,000 trees were shipped out from the Cloquet nursery to the cooperators for windbreak planting, of which 35,500 were conifers and 32,500 were deciduous. Among the conifers, the principal species are Norway pine, white spruce, Scotch pine, Colorado blue spruce, and jack pine; among the deciducus, Caragana, laurel-leaf willow, white elm, Russian popple, green ash, and white willow. New cooperators are coming in at the rate of about 45 annually. The new cooperators are accepted through the county agent's office and with his approval. A plan is prepared for the planting and the cooperator provided with the most suitable species at the rate of $10 a thousand. The cooperator obligates himself to cultivate and take care of the plantation. The windbreak plantations are inspected every year and records kept for 5 years as to the species that survive, condition of the trees, their growth and height and diameter, cultivation, presence of insects and disease, and similar facts that can throw light upon the success or failure of the plantation.

CLOQUET FOREST EXPERIMENT STATION

Hanson and Probstfield spent a week in the field rounding the data for the study of the rate of establishment of second-growth stands. The data so far secured seems to indicate that fire has even a more potent effect on the stand than was supposed. It not only affects the composition but profoundly affects the rate of growth.

Preliminary work on the removal of excess water from swamps has been started. It is planned to study the water level in swamps for a season before ditching. Studies made in some partially drained swamps near the station showed no increase in the rate of growth. These swamps were of the muskeg type and the peat was probably too deep.

The fall checking of field plantings is in progress. Counts made on the plots established in the rock outcrop region in 1922-23 show an almost complete failure. The surviving individuals showed 100 per cent rabbit injury.

The ten-year count of the field plantings on the experiment station area show a marked advantage of transplant stock over seedlings. Plantings using 2-2 Norway pine are now 4 to 6 feet high, while those on the same site using 3-0 Norway pine are one to two feet high.

Cones are still coming in. There are now about 1000 bushels of Norway pine cones at the station, most of which are the property of the State forest service.

On October 10-11 at the invitation of Dean W. C. Coffey, a group of newspaper men from all over the State met at Cloquet to inspect the experiment station and the wood-using industries of Cloquet. The purpose of the visit was to give them a better understanding of the needs of forestry that they might write intelligently concerning the forest taxation amendment which comes up for a vote on November 4. The first day was spent at Cloquet and the second day a trip through the cut-over regions to some virgin timber was made, followed by a trip to Virginia, where the Virginia and Rainy Lake mills were inspected. While at Cloquet the visitors were the guests of the Civic and Commerce Association of Cloquet.

The abundance of rain during the early fall has kept the fire hazard very low in this vicinity. There is still a chance that a fire season may develop but it would be rather short.

Addresses during the month: Raphael Zon; Minnesota newspaper men, Cloquet, Minn., October 10; Tri-State Development Congress, Ashland, Wis., October 16; Rotary Club, Merrill, Wis., October 20. Joseph Kittredge, Jr.; Forestry Club of University of Minnesota, St. Paul, October 6; Minneapolis Civic and Commerce Association, Minneapolis, October 22. J. A. Mitchell; Ohio Valley Section of Society of American Foresters, Clifty Falls, Ind., October 16.

Visitors during the month included Dr. E. D. Ball, Director of Scientific Work, Department of Agriculture, Washington, D. C., Dr. H. L. Schantz, Bureau of Plant Industry, Washington, D. C.; Mr. George B. Sudworth, Washington, D. C., Mr. C. J. Stahl, Denver, Colo.

NORTHEASTERN FOREST EXPERIMENT STATION

Field work on the three major projects under way at the station continued during October. Behre spent most of the month in Maine, Meyer in Vermont, and Westveld in New York. Meyer completed his field work the latter part of the month and has now started to work up the results.

Gast made a couple of trips to Amherst to look up certain library references and to talk with some of the men at the agricultural college regarding his soil investigations with particular reference to soil bacteriology. We are gradually getting acquainted with more and more of the members of the college staff, and are finding them of increasing assistance in connection with our work.

During the first half of the month, Dana spoke at the annual meeting of the Maine Press Association in Portland, following this by a short trip to Augusta, Bangor, and Orono, to keep in touch with various timberland owners and others interested in the work of the station. He found considerable interest among timberland owners in securing State appropriations from the next legislature for the continuance of Peirson's work in forest entomology.

The latter part of the month, Dana attended the conference held in New York to consider the development of international relations in forestry, and served as chairman of the committee appointed by the conference to call on Doctor Rose, president of the International Education Board. While making it plain that the board has not yet committed itself to including forestry in its activities, Doctor Rose showed great interest in the subject. After its conference with him, the committee felt hopeful that favorable action would eventually be taken by the board. Arrangements were made to bring the entire matter up for discussion at the annual meeting of the Society of American Foresters in December.

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

The Douglas fir yield study crew was in the field throughout the month in west central Oregon. Incessant heavy rains the last week of the month lost them some time. However, during the month 103 plots ($63\frac{3}{4}$ acres) were measured in 13 tracts. A number of areas suitable for future work have been looked out ahead in the Willamette valley and foothill region. One of the areas worked lately, bearing a heavy stand of Douglas firs up to 18 and 20 inches in diameter, was plowed and harrowed in 1881. McArdle prepared an article on this study with photographs for the New Year's edition of the Portland Telegram.

At Wind River the hydro-electric plant has been put into working condition and this, together with wiring the experiment station, has taken considerable of Simson's time. He has been making daily at 5.00 p. m., since September 1, forecasts of the probable minimum night temperature to aid the nursery administration in determining when seedling beds should be covered. A comparison of the prediction and the actual temperatures shows that the greatest deviation for any one day was $3\frac{1}{4}^{o}$ and the average deviation was .91°.

The periodic remeasurement of some thinned plots in a 15-year old Douglas fir sapling stand took a week of Isaac's time and some of Simson's. The Director made a brief trip to Wind River with Mr. Alexander of the Weather Bureau fire forecast service and Mr. Geo. C. Joy, manager of the Washington Forest Fire Association, and a good discussion was had of fire weather predictions.

The most important event of the month was the major periodic reexamination of the yellow pine methods of cutting and reproduction plots on the Whitman. The plots have been in the care of the Priest River station which is now to relinquish them to the Pacific Northwest Station, in view of the fact that the latter station is to cover the northern yellow pine type. This examination, which was conducted by Mr. Weidman assisted by Messrs. First and Putnam of the Whitman, and Messrs. Isaac and Munger of this station, was made in great detail as it was ten years since its inception. Mr. Weidman will prepare the report which promises to yield some interesting and valuable results.

From the Whitman, Munger and Isaac went to west central Idaho, where a reconnaissance was made with Assistant District Forester Morse of parts of the four yellow pine forests of D-4 - the Boise, Payette, Idaho and Weiser, and the private lands adjacent thereto - which fall within the field of the station. The Supervisors of all four Forests were seen in the field as well as many other officers. The subject above all others which Forest Officers wish to have studied and feel the need of is growth and yield. A number of lumbering operations both on public and private lands were visited and considered for their suitability as centers for intensive study.

While Isaac went back to the Whitman, Munger returned to Portland to attend the Pacific Logging Congress at which he read a paper on "The Objectives of the New Federal Forest Experiment Station." It was noticeable that at this congress there was more interest shown than ever before in reforestation, both at the sessions and in the private conversations outside. The Director went on the field trip to Longview where a visit was made to the huge new mill, the annual banquet of about 400 lumbermen was held, and a day's trip was made to the woods where electric donkeys were in action.

During the days of the logging congress those interested in fire weather studies held an informal conference to discuss plans for working up the meteorological data collected by various agencies this summer and coordinating them with the record of fires. Among those present were District Forecaster Wells and Messrs. Alexander and Dague of the Weather Bureau (the last two left October 25 for California for frost work during the winter), Chapler of the Western Forestry and Conservation Association, Cowan of the British Columbia Forestry Branch, Joy of the Washington Forest Fire Association, and Osborne, Simson and Munger of the Forest Service.

Among the callers at the office this month was J. L. Alexander, in charge of Forest Research in southern British Columbia, who spent an entire day comparing plans of work and methods of study with the Director. British Columbia has problems so similar to ours and is doing so much comparable work that close correlation is most desirable.

Word has been received that the Secretary approved Portland as the headquarters for the station. This seems to have met with general approval in the District.

The last days of the month a vigorous search was made for space in the uptown office buildings. Since the vacancies now are less than 1 per cent in the central part of the city, the choice is not large and it is difficult to find ideal quarters for our needs.

PRIEST RIVER EXPERIMENT STATION

Two weeks of field work this month were devoted by Weidman to the remeasurement of a set of permanent methods-of-cutting plots on the Whitman Forest in eastern Oregon. This project comprises three 15-acre plots on which various degrees of selection cutting in yellow pine were practiced at the time of establishment 10 years ago. The present field work marked the second half decade remeasurement of the reserved trees and the tenth annual reproduction examination of the sixty 2-square rod quadrats located on the plots. Some very interesting and valuable information has resulted from these examinations, not the least of which is the 10-year record of germination, mortality and establishment of reproduction.

An interesting feature of the remeasurement of these plots was the excellent cooperation on the job between the Whitman Forest, the Pacific Northwest station and the Priest River station. Thirty-six man days were required for the work. Although Weidman was responsible for the yellow pine projects at the time of this work, there was contributed to the job the time of Munger and Isaac of the Pacific Northwest Station and two forest assistants of the Whitman Forest. On the completion of the present progress report by Weidman, this project is to be taken over by the Pacific Northwest Station.

Weidman spent the latter part of October at the Priest River field station where he was chiefly engaged, together with Haig and Kempff, in remeasuring two series of thinning plots. Each series comprises four half-acre plots in 70-year old white pine, one series being five years old and the other ten. Three plots in each set represent different degrees of thinning from light to moderately heavy, and one plot in each represents the undisturbed natural condition. Although the field work has not yet been entirely finished, there appears to be one rather striking result worth mentioning. Increment cores show practically no accelerated diameter growth, even in the dominant trees of the most heavily thinned plot ten years since cutting. Preliminary examination of cores reveals the fact that diameter growth had fallen off appreciably by the time these stands were 50 years old. The first thinnings here were apparently made 10 years or more too late or else none of the thinnings was severe enough. It is proposed now to establish a plot in each series of considerably heavier thinning, and also to locate a series in a stand between 35 and 50 years old. Thinning in so valuable a species as western white pine is something Research will be required to know about in the future. To know about it when the knowledge will be needed means that we should have the sample plots established now. Our experience with the present series of plots shows that.

Except for three days' field work on yellow pine, Gisborne spent the entire month of October in the office working on his progress report for RS, Pf-5, fire studies, and compiling District weather records for use in the proposed bulletin by Flint and Gisborne. One day was spent with State Forester McLaughlin studying yellow pine reproduction that has followed old cuttings in the Bitterroot valley.

Haig spent the first two weeks of the month on the white pine methods-of-cutting project studying conditions on 10-year old timber sales in the Coeur d'Alene region. In this connection he found and reexamined a plot established and examined by Brewster in 1914 and 1916, which in the interim had almost fallen into the lost and abandoned class. After a week devoted to some unfinished work connected with Larsen's reproduction-after-fires study, Haig repaired to the field station to assist in remeasuring the thinning plots.

Wahlenberg reports that 3,200 western white pine seedlings, consisting of three size classes with roots pruned to 6 and 8 inches, were transplanted into an experimental plantation. Each separate field test is based on 400 trees and split into 8 parts which are spread over the area to include site variations. About 500 seedlings, representing the field planted stock, have been held for detailed laboratory measurements, weights and photographic records. The weather has favored all nursery work this fall in the vicinity of Savenac.

At the demonstration forest, work on the Benton Creek Road was finished near the end of the month and slash disposal on two sale areas was begun. Marking, scaling, and supervision of the active sale required some of Kempff's attention. Instrument readings in connection with Gisborne's fire studies were continued till October 20. Assistance was given to Weidman on a day's work in a yellow pine cutting about 30 miles from the station. Several days of the resident officer's time still seem to be required every month in the maintenance of buildings and the plant in general. Visitors of the month included Messrs. Eldredge and Koch of Washington and Missoula respectively.

SOUTHERN FOREST EXPERIMENT STATION

General

Assistant Forester Clapp spent from the 9th to the 21st with us. The main objects of his visit were to become personally acquainted with the work and personnel of the station, and to visit various points in our territory which are being considered as permanent headquarters. After two days in New Orleans, Mr. Clapp spent one day each at the Bogalusa-McNeill and the Urania Branch Stations. He and Forbes also spent a few hours on the campus of the State university at Baton Rouge. Mobile, Montgomery, Athens (Georgia), Atlanta, and Jacksonville were visited on successive days, and thanks to lumbermen, foresters, and associations of commerce a very fair idea was formed of the relative merits of each of these places as permanent headquarters for the station. In order to save time publicity was avoided on the trip, and only those who could really contribute to a wise solution of our problem were called upon. Mr. Clapp spent a day at Starke, and the party was joined there for a few hours by Miss Gerry. After a day in Savannah and a morning in Atlanta with the president of the Southern Association of Agricultural Workers, whom we had not been able to see on our first visit to Atlanta, Clapp and Forbes wound up their trip with a visit to Clemson College, S. C. No final decision was reached before Mr. Clapp went on, but upon his return to the office Forbes completed a memorandum on the subject. Incidentally, the preparation of this memorandum required the drafting of a forest type map covering our region. The type map will be invaluable in planning the future work of the station.

Mr. Clapp's visit gave us an opportunity to discuss with him a variety of other miscellaneous matters, among the most important of which is the personnel of our advisory council. Forbes will make final recommendations as to the membership of this council in time to have the council appointed and pass upon the investigative program for the coming year.

The annual investigative report and program of new work was written in part early in the month, as of October 1, but in future years will be prepared as of September 1. These dates accord better with our main office season than a date late in the winter, and the only drawback will be our inability to present the full season's work in naval stores.

Additional student assistants appointed during the month are James L. Averell and Philip C. Wakeley. Averell graduated in 1924 from the University of California Forest School and has had considerable Forest Service experience in volume table work. He is eligible on the Junior Forester roll, but intends to take a year of post graduate study after his work with us. Wakeley likewise has Junior Forester eligibility, having qualified in 1923, but decided to spend a year as a candidate for a master's degree at Cornell. These and earlier appointees have enabled us to make material progress in the checking and reworking of data secured in nearly every line of our work. We begin to wonder how we ever managed to get along without temporary assistants.

Forbes addressed the semi-annual meeting of the North Carolina Pine Association at Charleston. This is the first opportunity anyone from the station has had to appear before this association, whose membership includes the smaller sawmill men in South Carolina, Georgia, and Alabama, as well as in the States further north.

Among the visitors at New Orleans have been Prof. H. W. Barre, Director of the South Carolina Agricultural Experiment Station; H. B. Hewes, a foremost cypress manufacturer, whose mill will run out of logs in December, after some 30 years of operation, and who is anxious to dispose of his 50,000 acres of cut-over lands to a pulp and paper company; and Mr. R. A. St. George, of the Bureau of Entomology, who addressed the annual meeting in New Orleans of the Southern Logging Association. Mr. Cary and Miss Gerry visited Starke for parts of two days.

Only the most strenuous efforts of our cooperators of the Coastal Plain Experiment Station kept fires from sweeping into our leased pastures at McNeill. In spite of one of the worst droughts on record, which in Louisiana began early in the summer, the Great Southern and the Urania lumber companies, on whom we depend for protection of our Bogalusa and Urania areas against fire, have had very small losses, and none at all in the Government leases.

Miss North resigned on October 31 to accept a permanent position with another Government department. As a memorial to her industry she left our photograph album, which we have been planning for three years to put in shape, complete except for the most recent pictures we have taken. This will be a great help to us in the effective illustration of future reports and publicity material.

Protection

Fire. Hine revised and thoroughly checked his recent report on the Roberts plots at Urania, with Averell's help. Tinker and Averell measured the seedlings and saplings on these plots, which is the first time that such measurements have been taken prior to the annual burning.

The advantage of a measurement at this time is that it enables us to differentiate between loss from fire and loss from disease. With the help of Tinker and Averell Hine made the fall burn in his various loblolly plots, and reports a slow, clean burn. Had the youngest age class burned after the dew had evaporated and the wind risen, Hine feels that the plot might have been wiped out. Owing to the extreme dryness of vegetation burns have been very severe in north Louisiana this fall.

Hine has found that the fire weather warnings issued by the Weather Bureau from New Orleans to the National Forests in Oklahoma and Arkansas, and to the State Forester of Texas, consist of 36-hour advance information on the direction, velocity, and duration of winds, and such general information as the approach and probable duration of fair weather, change of temperature, clouds, rain, etc.

Disease. Hine reports that the longleaf pine needle blight has done comparatively little damage at Urania this year, probably owing to the dry weather.

Insects. The pine tip moth continues to be very prevalent in the loblolly plantations at Bogalusa, both our own and the company's. Hadley has assisted the Great Southern in working out a proper spraying solution for the control of the scale (Toumeyella sp.) in the company's nursery. Without spraying damage would have been heavy.

Measurements

We received the news from Washington that about 100 additional shortleaf pine plots, chiefly from Arkansas, South Carolina, and North Carolina, are needed to replace data which had necessarily been eliminated from the pine growth study. The discarded plots are chiefly old material gathered on a different basis than prescribed by the present study. Hine spent three days with Averell on volume table measurements of loblolly pine, to acquaint him with our methods. Averell and Tinker are being groomed for the completion of the pine growth study.

Student Assistants Tinker and Wakeley made considerable progress in a check of the tupelo yield study figures and in reproduction of the numerous curves accompanying Hadley's report.

Management

Hine found time for work on his report on the establishment of the various natural reproduction studies in the Greeley Pasture at Urania. The plots and quadrats in these studies of longleaf, shortleaf, and loblolly reproduction were established more than a year ago. Progress on our management projects in general awaits the completion of our permanent force, since all present members of the staff have been thoroughly occupied with other work.

En route to New Orleans from Starke, Shivery visited the Florida National Forest and made the annual counts of the longleaf seedlings in our natural reproduction studies there.

Naval Stores

With the help of Wiswell, Wyman has not only kept up the current work of chipping and dipping, but has made excellent progress in checking and revising last year's technical reports and in putting this year's records into shape for immediate use. The longleaf tract was chipped last on the 15th, and the slash pine a week later except for one group which will be chipped late for purposes of comparison with the ordinary season's chipping. Both species were scraped by the end of the month.

Wyman submitted a summary of the opinions gathered from a large number of naval stores men as to the character and scale of work which it would be advisable to undertake with our increased funds. Although the information was overwhelmingly in favor of large-scale work, that is with groups of 3,000 or 4,000 faces, on a few selected lines, with small-scale work on an increased number of other projects, it was finally decided that such large-scale work could not be attempted during the next field season. If past experience has proven anything it has shown the need for very careful planning of the naval stores tests, which would be impossible in the short time before the next chipping season. The extensive surveys of turpentining damage planned for this winter will be very helpful in determining future locations and lines of work. In addition to the damage surveys a substantial increase in our study of individual tree yields was tentatively approved by Mr. Clapp.

Wiswell and Shivery were able to make progress in the individual tree description work. Shivery's chief contribution to the naval stores work was, however, the preparation of a much-needed soil map for both the longleaf and slash pine tracts. The latter proved to be quite uniform, but the former, as we had already begun to suspect, showed considerable variations in soil and moisture conditions which will have a decided effect on the interpretation of the yields from our various groups.

Wyman was much encouraged by Mr. Cary's praise of the excellent chipping which Wyman succeeded in getting his chipper to do this year. The average negro laborer is perfectly able to chip according to almost any style, but it is no small job to get him to use his skill consistently.

Forestation

With the ripening of an unusually good pine seed crop of practically all species over the greater part of our territory, Hadley, Tinker, and Wakeley have been extremely busy with seed collection and extraction. Taking warning from last year's experience, when a delay in extraction of seed, particularly longleaf, resulted in heavy loss, the Great Southern

Lumber Company has gone into large-scale seed extraction by solar temperatures. But rather than take a chance on obtaining seed from the company, Hadley has collected his own cones and has built a simple dry kiln for curing them. The design incorporates the experience of Forest Service and other investigators, and some of Hadley's ideas as well. Further experimentation, followed up by germination tests, will be necessary before Hadley is satisfied with his apparatus, but he has been surprised at securing almost two pounds of seed from a given lot of longleaf cones, after subjecting them to 48 hours of high temperature, as opposed to the usual yield of about a pound from sun-cured cones.

Measurements were made and weights taken of sample seedlings from last year's experimental sowings.

The loblolly seedlings in our spacing plantation were counted, and some damage from stock and insects reported.

Plans were laid for cooperative work in seed-testing by Miss Minna F. Koch, a graduate of Tulane University, who is planning on graduate work for a doctor's degree. This class of work we have been unable to handle previously to our satisfaction, and we are fortunate in being able to interest Miss Koch. Some of her work will be a repetition of Hadley's, but she will have time to run a number of additional tests.

FOREST
SOUTHWESTERN EXPERIMENT STATION

The grazing situation on the Coconino and Tusayan again came into the limelight early in September. Pearson accompanied Marsh, Scott, Kircher and Supervisor Kimball on a week's inspection trip in order to ascertain the status of natural reproduction with reference to damage by grazing. It was found that on extensive areas the excellent stand of seedlings established in 1919 has been either completely destroyed or is well on the way toward this end. On the areas from which sheep have been excluded the damage is less, on the whole, but even here it is in most cases excessive. All the administrative men agreed that previous reductions in stock have been entirely inadequate, and that we have reached a point where drastic measures are necessary.

From September 15 to October 15 the rangers' training camp was held at the experiment station. The presence of some 30 forest rangers and a number of higher administrative men afforded a good opportunity to put over the work of the experiment station. A number of sample plots shown to the men furnish object lessons which cannot fail to register.

During September and October two plots of 5 and 10 acres in sheep excluded areas were fenced in order to furnish an index of the effectiveness of sheep exclusion and management of cattle grazing as a means of controlling damage to forest reproduction.

The first series of experimental thinning plots in District 3 was established in the latter part of October.

The fourth measurement of four growth plots on the Coconino and Tusayan has just been completed.

Pearson made a trip to the Lincoln on October 24 and spent the remainder of the month studying Douglas fir reproduction and brush disposal in the Sacramento Mountains.

DISTRICT 5 - CALIFORNIA DISTRICT

The first few days of October, Show was absent on sick leave. Several days were then spent with Kotok in preparing material for the Board of Fire Review, of which Show is a member. The galley proof for the Departmental Bulletin "The Role of Fire in the California Pine Forests" was corrected between two days and returned to the Forester.

The District Board of Fire Review, composed of Messrs. Redington, Deering, Kotok, Price, Rogers and Show, of District 5, and Kelley of the Washington office, started its work October 20. During the last third of the month it visited the Shasta and Plumas Forests and went over in great detail the accomplishments of the season and the failures, and made a thorough-going analysis of the fire problem. This work will continue for at least another two weeks but already several major conclusions are evident. The first of these is that we have no real measure of the maximum rate of spread of fires in different forest types on which our field men can make an estimate of the type and extent of control measures necessary. Several fires were analyzed, which starting at the middle of the day reached the size of over 2,000 acres before evening, necessitating the construction of between 8 and 10 miles of fire line to control. Unless the men in charge of fire suppression can know several hours in advance how large a particular fire is to become, there is serious danger of underestimating the resources needed and consequently failure to control the fire the first night.

Another distinct conclusion is that we must seriously attack the problem of reducing physical hazards by such means as snag disposal, slash disposal, construction of more fire trails through large areas of restocking brush fields, along rights of way, etc. Under critical conditions such as existed for a continuous stretch of 4½ months this year, the possibility of controlling fires is seriously reduced because of our previous inability to concentrate physical prevention measures in our forests.

The third important conclusion is the vital need for thorough and systematic training of men. Perhaps in no task in civilian life is the penalty for unskillful work so severe as in fire suppression. It is

ridiculous to assume, as we have, that the mere pinning of a badge on a man makes him a skillful fire fighter. It ought to be no more impossible to teach men to fight fires than to teach them to wage war and it is evident that serious attention must be paid to this exceedingly important problem.

Dunning, during the early part of the month, completed the remeasurement of a large group of thinning and yield plots on the Plumas Forest. In this work he was assisted by Junior Forester Kellogg, who was loaned for the work by the Supervisor of the Shasta Forest. Dunning then spent some time in the office, starting the compilation work on data accumulated, and toward the end of October left for the Tahoe Forest to do some additional work on the yield study. The plan is to secure data which it is hoped may lead to a workable method for applying yield tables based on fully stocked stands to such stands as are only partially stocked.

Library

During the month of October there were 843 loans of books and periodicals from the library, and 118 members of the Service and others consulted the library in person. There were 273 books and articles indexed for the library catalogue last month.

MANUSCRIPT NEWS NOTES

District 2

Natural Reproduction and Grazing Damage. F. R. Johnson.

Effect of Thinnings - Black Hills Yellow Pine Administrative Study. Jos. A. Donery and Fred R. Johnson.

Pacific Northwest

Physiological Characteristics of Tree Seeds. J. V. Hofmann (to Journ. Agr. Res.)

Best Time for Sowing Silver Fir in the Nursery. J. V. Hofmann (to Journ. Agr. Res.)

Priest River

Disposal of Undesirable Hemlock and White Fir in the Western White Pine Type. D. R. Brewster and J. A. Larsen (to Journ. Agr. Res.)

Appalachian

Grazing Damage in the Southern Appalachians. Working Plan 1924. F. W. Haasis.

Southern

How Deep Should I Chip My Timber? L. Wyman (Naval Stores Review.)

Hints to Farmers on Leasing Timber; Height of Face and Size of Hack. L. Wyman (Naval Stores Review.)

District 5

The Management of Forest Properties in the California Pine Region as a Problem in Applied Ecology (page proof.)

The Role of Fire. S. B. Show and E. I. Kotck (page proof Dept. Bul. 1294).

Southwestern

Growing Season of Western Yellow Pine. G. A. Pearson. (Page proof. Journ. Agri. Res. for issue of July 12, 1924.)

Lake States

Forestry and Land Development in the Lake States. R. Zon. (Journ. Land and Public Economies.)

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Bates, C. G. "Forest Types in the Central Rocky Mountains as Affected by Climate and Soil. Dept. Bul. 1233.

Krauch, Herman. "Acceleration of Growth in Western Yellow Pine Stands after Cutting." Journ. of For. October, 1924.

Bruce, Donald. "A New Technique for Growth Studies by Stem Analyses." Journ. of For. October, 1924.

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